

DB2 Application Programming (5 Days)

DESCRIPTION: Students who complete this course will be able to code SQL statements to access DB2 objects, both using SPUFI under DB2I, and from within application programs (in the student's standard host environment - CICS, IMS/DB/DC, TSO, or batch). The student also learns how to establish the appropriate execution environment for programs that reference DB2 Data Bases

AUDIENCE: COBOL, PL/I, C, or assembler programmers who need to work with DB2 Databases, both from a DB2I perspective, and from within application programs.

PREREQUISITES: Experience in designing and coding application programs in COBOL, PL/I, C, or assembler in the application environment (CICS, IMS/DB/DC, TSO, or batch) in which DB2 will be used.

Major Topics Include

- Relational database concepts
- DB2 concepts
- DB2I, SQL, and SPUFI
- SELECT / UPDATE / DELETE / INSERT / MERGE
- COMMIT / ROLLBACK
- Joined and nested queries
- Subqueries
- Creating DB2 tables
- DB2 objects
- DB2 system catalog tables
- SQL in application programs
- Host variables and structures
- DCLGEN and SQLCA
- BIND / REBIND / FREE
- Cursors and locks
- Security and Authorization
- EXPLAIN and efficiency considerations

Exercises

There are 13 machine exercises, and one optional machine exercise.

Course Outline

Introduction - Overview of DB2

Computer Exercise: Course Setup

The Sample Databases - Employees and Departments

Relational Operations: Select, Project, Join

Overview of DB2 SQL - the SELECT statement: WHERE clause

Basic SPUFI usage

Computer Exercise: A First

Exploration of SQL

DB2 System Components and Control Flow

SPUFI Processing and menu options

The Sample Databases - Projects and Activities

SELECT DISTINCT

SELECT with multiple conditions

Computed values, NULL, and LIKE in SELECT statements

CASE Expressions

Computer Exercise: SELECT with

Complex Conditions

SPUFI Defaults

Autocommit and explicit Commit and Rollback

The Sample Databases - Project Activities and Activity Assignments

FETCH FIRST "n" ROWS ONLY

Built-in Column Functions

Aggregation: GROUP BY and HAVING

Result set sequencing: ORDER BY

Computer Exercise: Data Aggregates

Special Registers

Dates, Times, and Timestamps

Date Operations

Built-in Scalar Functions

Computer Exercise: Special

Registers and Scalar Functions

Joins

Name Specification

Joins with Aggregates

Outer Joins

Classic join syntax

Computer Exercise: Joins

Subqueries

Outer Joins

UNION

EXCEPT

INTERSECT

Computer Exercise: Subqueries and

UNION

CREATE, DROP, and ALTER

Primary and Foreign Keys

UPDATE, DELETE, and INSERT

MERGE

Defining and Using Views

Computer Exercise: Creating and

Changing Tables

DB2 Objects

DB2 Catalog Tables: SYSTABLES, SYSCOLUMNS, SYSDBRM, SYSPLAN,

SYSINDEXES, SYSKEYS,

SYSPLANAUTH, SYSTABAUTH,

SYSPLANDEP, SYSVIEWS

Computer Exercise: Querying the

Catalog Tables

Application Development Control Flow
DCLGEN

Computer Exercise: DCLGEN

SQL in Application Programs
Indicator Variables and Error Handling

Computer Exercise: Coding a DB2
Program

BIND/REBIND/FREE

Authorizing Users

Executing a Program

Common Problems

Computer Exercise: Running a DB2
Program

Cursors in application programs
UPDATE, DELETE, INSERT, and
MERGE in programs

Insensitive and Sensitive Static

Scrollable cursors

Dynamic Scrollable cursors

Computer Exercise: Using Cursors
and Table Modification

SQL SET statement

The rest of DB2I

Batch Processing

Locks and Locking

EXPLAIN, Tuning and Performance

Odds and Ends

Optional Computer Exercise:
Commands, EXPLAIN, More
Programming